



2008 VRSC Models Service Manual

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ABOUT THIS MANUAL

Product: 2008 Harley-Davidson VRSC Models Motorcycle Service Repair Workshop Manual

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This Service Manual has been prepared with two purposes in mind. First, it will acquaint the user with the construction of the Harley-Davidson product and assist in the performance of basic maintenance and repair. Secondly, it will introduce to the professional Harley-Davidson Technician the latest field-tested and factory-approved major repair methods. We sincerely believe that this Service Manual will make your association with Harley-Davidson products more pleasant and profitable.

HOW TO USE YOUR SERVICE MANUAL

Refer to the table below for the content layout of this manual.

NO.	CHAPTER
1	Maintenance
2	Chassis
3	Engine
4	Fuel System
5	Starter
6	Cooling System
7	Transmission
8	Electrical
A	Appendix A Connector Repair
B	Appendix B Wiring
C	Appendix C ABS
D	Appendix D Valve Lash
E	Appendix E Conversions
F	Appendix F Glossary

Use the TABLE OF CONTENTS (which follows this FOREWORD) and the INDEX (at the back of this manual) to quickly locate subjects. Sections and topics in this manual are sequentially numbered for easy navigation.

For example, a cross-reference shown as **2.1 SPECIFICATIONS** refers to chapter 2 CHASSIS, heading 2.1 SPECIFICATIONS.

For quick and easy reference, all pages contain a section number followed by a page number. For example, **page 3-5** refers to page 5 in section 3.

A number of acronyms and abbreviations are used in this document. See the [F.1 GLOSSARY](#) for a list of acronyms, abbreviations and definitions.

PREPARATION FOR SERVICE

WARNING

Stop the engine when refueling or servicing the fuel system. Do not smoke or allow open flame or sparks near gasoline. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00002a)

Good preparation is very important for efficient service work. A clean work area at the start of each job will allow you to perform the repair as easily and quickly as possible, and will reduce the incidence of misplaced tools and parts. A motorcycle that is excessively dirty should be cleaned before work starts.

Cleaning will occasionally uncover sources of trouble. Tools, instruments and any parts needed for the job should be gathered before work is started. Interrupting a job to locate tools or parts is a distraction and causes needless delay.

NOTES

- *To avoid unnecessary disassembly, carefully read all relative service information before repair work is started.*
- *In figure legends, the number which follows the name of a part indicates the quantity necessary for one complete assembly.*
- *When servicing a vehicle equipped with the Harley-Davidson Smart Security System (H-DSSS), you must first disarm the security system. Either keep the fob in close proximity to the vehicle, or use Digital Technician to disable the security system while the vehicle is being serviced and re-enable the system after service is completed.*

SERVICE BULLETINS

In addition to the information presented in this Service Manual, Harley-Davidson Motor Company will periodically issue Service Bulletins to Harley-Davidson dealers. Service Bulletins cover interim engineering changes and supplementary information. Consult the Service Bulletins to keep your product knowledge current and complete.

USE GENUINE REPLACEMENT PARTS

WARNING

Do not use aftermarket parts and custom made front forks which can adversely affect performance and handling. Removing or altering factory installed parts can adversely affect performance and could result in death or serious injury. (00001a)

To ensure satisfactory and lasting repairs, carefully follow the Service Manual instructions and use only genuine Harley-Davidson replacement parts. Behind the emblem bearing the words GENUINE HARLEY-DAVIDSON stand more than 100 years of design, research, manufacturing, testing and inspecting experience. This is your assurance that the parts you are using will fit right, operate properly and last longer.

WARNINGS AND CAUTIONS

Statements in this service manual preceded by the following words are of special significance.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. (00119a)

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. (00139a)

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage. (00140a)

NOTE

Refers to important information, and is placed in italic type. It is recommended that you take special notice of these items.

Proper service and repair is important for the safe, reliable operation of all mechanical products. The service procedures recommended and described in this service manual are effective methods for performing service operations.

WARNING

Always wear proper eye protection when using hammers, arbor or hydraulic presses, gear pullers, spring compressors, slide hammers and similar tools. Flying parts could result in death or serious injury. (00496b)

Some of these service operations require the use of tools specially designed for the purpose. These special tools should be used when and as recommended. It is important to note that some warnings against the use of specific service methods, which could damage the motorcycle or render it unsafe, are stated in this service manual. However, please remember that these warnings are not all-inclusive. Inadequate safety precautions could result in death or serious injury.

Since Harley-Davidson could not possibly know, evaluate or advise the service trade of all possible ways in which service might be performed, or of the possible hazardous consequences of each method, we have not undertaken any such broad evaluation. Accordingly, anyone who uses a service procedure or tool which is not recommended by Harley-Davidson must first thoroughly satisfy himself that neither his nor the operator's safety will be jeopardized as a result. Failure to do so could result in death or serious injury.

PRODUCT REFERENCES

WARNING

Read and follow warnings and directions on all products. Failure to follow warnings and directions can result in death or serious injury. (00470b)

When reference is made in this manual to a specific brand name product, tool or instrument, an equivalent product, tool or instrument may be substituted.

Kent-Moore Products

All tools mentioned in this manual with an "HD", "J" or "B" preface must be ordered through SPX Kent-Moore. For ordering information or product returns, warranty or otherwise, visit www.spx.com.

Loctite Sealing and Threadlocking Products

Some procedures in this manual call for the use of Loctite products. If you have any questions regarding Loctite product usage or retailer/wholesaler locations, please contact Loctite Corp. at www.loctite.com.

PRODUCT REGISTERED MARKS

Allen, Amp Multilock, Bluetooth, Brembo, Delphi, Deutsch, Dunlop, Dynojet, Fluke, G.E. Versilube, Gunk, Hydroseal, Hylomar, Kevlar, Lexan, Loctite, Lubriplate, Keps, K&N, Magnaflux, Marson Thread-Setter Tool Kit, MAXI fuse, Molex, MPZ, Multilock, Novus, Packard, Pirelli, Permatex, Philips, PJ1, Pozidriv, Robinair, S100, Sems, Snap-on, Teflon, Threadlocker, Torca, Torco, TORX, Tufoil, Tyco, Ultratorch, Velcro, X-Acto, and XM Satellite Radio are among the trademarks of their respective owners.

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All photographs, illustrations and procedures may not necessarily depict the most current model or component, but are based on the latest production information available at the time of publication.

Since product improvement is our continual goal, Harley-Davidson reserves the right to change specifications, equipment or designs at any time without notice and without incurring obligation.

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NOTES

SERVICING A NEW MOTORCYCLE

WARNING

Perform the service and maintenance operations as indicated in the regular service interval table. Lack of regular maintenance at the recommended intervals can affect the safe operation of your motorcycle, which could result in death or serious injury. (00010a)

Service operations to be performed before customer delivery are specified in the applicable model year PREDELIVERY AND SET-UP MANUAL.

The performance of new motorcycle initial service is required to keep warranty in force and to ensure proper emissions systems operation. See [1.2 MAINTENANCE SCHEDULE](#).

SAFE OPERATING MAINTENANCE

NOTES

- Do not attempt to retighten engine head bolts. Retightening can cause engine damage.
- During the initial break-in period, use only Harley-Davidson 20W50 engine oil. Failure to use the recommended oil will result in improper break-in of the engine cylinders and piston rings.

A careful check of certain equipment is necessary after periods of storage, and frequently between regular service intervals, to determine if additional maintenance is required.

Check:

1. Tires for abrasions, cuts and correct pressure.
2. Secondary drive belt for proper tension and condition.
3. Brakes, steering and throttle for responsiveness.
4. Brake fluid level and condition. Hydraulic lines and fittings for leaks. Also, check brake pads and rotors for wear.
5. Cables for fraying, crimping and free operation.
6. Engine oil and transmission fluid levels.
7. Headlamp, auxiliary lamp, tail lamp, brake lamp, horn and turn signal operation.

SHOP PRACTICES

Repair Notes

General maintenance practices are given in this section.

NOTES

- *Repair = Disassembly/Assembly.*
- *Replacement = Substitute a **new** part for existing component.*

All special tools and torque values are noted at the point of use.

All required parts or materials can be found in the appropriate PARTS CATALOG.

Safety

Safety is always the most important consideration when performing any job. Be sure you have a complete understanding of the task to be performed. Use common sense. Use the proper tools. Protect yourself and bystanders with approved eye protection. Don't just do the job - do the job safely.

Removing Parts

Always consider the weight of a part when lifting. Use a hoist whenever necessary. Do not lift heavy parts by hand. A hoist and adjustable lifting beam or sling are needed to remove some parts. The lengths of chains or cables from the hoist to the part should be equal and parallel and should be positioned directly over the center of the part. Be sure that no obstructions will interfere with the lifting operation. Never leave a part suspended in mid-air.

WARNING

Be sure to check capacity rating and condition of hoists, slings, chains and cables before use. Exceeding capacity ratings or using lifting devices that are in poor condition can lead to an accident, which could result in death or serious injury. (00466c)

Always use blocking or proper stands to support the part that has been hoisted. If a part cannot be removed, verify that all bolts and attaching hardware have been removed. Check to see if any parts are in the way of the part being removed.

When removing hoses, wiring or tubes, always tag each part to ensure proper installation.

Cleaning

If you intend to reuse parts, follow good shop practice and thoroughly clean the parts before assembly. Keep all dirt out of parts; the unit will perform better and last longer. Seals, filters and covers are used in this vehicle to keep out environmental dirt and dust. These items must be kept in good condition to ensure satisfactory operation.

When you are instructed in a step to clean fastener threads or threaded holes, proceed as follows: Clean all LOCTITE material from fastener threads and threaded holes. Use a wire brush to clean fastener threads. Use a thread chaser or other suitable tool to clean threaded holes. Use PJ-1 cleaner or equivalent to remove all traces of oil and contaminants from threads. Blow out all threaded holes with low pressure compressed air.

Clean and inspect all parts as they are removed. Be sure all holes and passages are clean and open. After cleaning, cover all parts with clean lint-free cloth, paper or other material. Be sure the part is clean when it is installed.

Always clean around lines or covers before they are removed. Plug, tape or cap holes and openings to keep out dirt, dust and debris.

Always verify cleanliness of blind holes before assembly. Tightening a screw with dirt, water or oil in the hole can cause castings to crack or break.

Disassembly and Assembly

Always assemble or disassemble one part at a time. Do not work on two assemblies simultaneously. Be sure to make all necessary adjustments. Recheck your work when finished. Be sure that everything is done.

Operate the vehicle to perform any final check or adjustments. If all is correct, the vehicle is ready to go back to the customer.

Checking Torques on Fasteners with Lock Patches

To check the torque on a fastener that has a lock patch:

1. Set the torque wrench for the lowest setting in the specified torque range.
2. Attempt to tighten fastener to set torque. If fastener does not move and lowest setting is satisfied (torque wrench clicks), then the proper torque has been maintained.

Magnetic Parts Trays

Magnetic parts trays are becoming common in the service facility because they are convenient and can keep parts from becoming lost during a repair procedure.

However, hardened steel parts can become magnetized when held in magnetic parts trays. Metal fragments that would ordinarily be washed away in the oil and trapped in the oil filter or magnetic drain plug during vehicle operation could be captured by magnetized parts in the engine, potentially causing accelerated engine wear and damage.

Parts that will be returned to service inside the vehicle's powertrain such as gears, thrust washers and especially bearings should never be kept in magnetic parts trays.

REPAIR AND REPLACEMENT PROCEDURES

Hardware and Threaded Parts

Install helical thread inserts when inside threads in castings are stripped, damaged or not capable of withstanding specified torque.

Replace bolts, nuts, studs, washers, spacers and small common hardware if missing or in any way damaged. Clean up or repair minor thread damage with a suitable tap or die.

Replace all damaged or missing lubrication fittings.

Use Teflon pipe sealant or LOCTITE 565 THREAD SEALANT on pipe fitting threads.

Threadlocking Agents

Always follow specific service manual procedures when working with fasteners containing preapplied threadlocking agents when fastener replacement is recommended. When re-using fasteners containing threadlocking agents, be sure to completely remove all existing threadlocking agent from fastener threads with a wire brush or wire wheel. Also, be sure to remove residual threadlocking agent from fastener hole using an appropriate thread chasing device and compressed air when using new or existing fasteners. Always use the recommended threadlocking agent for your specific procedure.

Wiring, Hoses and Lines

Hoses, clamps, electrical wiring, electrical switches or fuel lines if they do not meet specifications.

Instruments and Gauges

Replace broken or defective instruments and gauges. Replace dials and glass that are so scratched or discolored that reading is difficult.

Bearings

Anti-friction bearings must be handled in a special way. To keep out dirt and abrasives, cover the bearings as soon as they are removed from the package.

Wash bearings in a non-flammable cleaning solution. Knock out packed lubricant inside by tapping the bearing against a wooden block. Wash bearings again. Cover bearings with clean material after setting them down to dry. Never use compressed air to dry bearings.

Coat bearings with clean oil. Wrap bearings in clean paper.

When bearings are installed against shoulders, be sure that the chamfered side of the bearing always faces the shoulder. Lubricate bearings and all metal contact surfaces before pressing into place. Only apply pressure on the part of the bearing that makes direct contact with the mating part. Install bearings with numbered side facing out.

Always use the proper tools and fixtures for removing and installing bearings.

Bearings do not usually need to be removed. Only remove bearings if necessary.

Bushings

Do not remove a bushing unless damaged, excessively worn or loose in its bore. Press out bushings that must be replaced.

When pressing or driving bushings, be sure to apply pressure in line with the bushing bore. Use a bearing/bushing driver or a bar with a smooth, flat end. Never use a hammer to drive bushings.

Inspect the bushing and the mated part for oil holes. Be sure all oil holes are properly aligned.

Gaskets

Always discard gaskets after removal. Replace with **new** gaskets. Never use the same gasket twice. Be sure that gasket holes match up with holes in the mating part. But be aware that sections of a gasket may be used to seal passages.

If a gasket must be made, be sure to cut holes that match up with the mating part. Serious damage can occur if any flange holes are blocked by the gasket. Use material that is the right type and thickness.

Lip Type Seals

Lip seals are used to seal oil or grease and are usually installed with the sealing lip facing the contained lubricant. Seal orientation, however, may vary under different applications.

Seals should not be removed unless necessary. Only remove seals if required to gain access to other parts or if seal damage or wear dictates replacement.

Leaking oil or grease usually means that a seal is damaged. Replace leaking seals to prevent overheated bearings.

Always discard seals after removal. Do not use the same seal twice.

O-Rings (Preformed Packings)

Always discard o-rings after removal. Replace with **new** o-rings. To prevent leaks, lubricate the o-rings before installation. Apply the same type of lubricant as that being sealed. Be sure that all gasket, o-ring and seal mating surfaces are thoroughly clean before installation.

Gears

Always check gears for damaged or worn teeth.

Remove burrs and rough spots with a honing stone or crocus cloth before installation.

Lubricate mating surfaces before pressing gears on shafts.

Shafts

If a shaft does not come out easily, check that all nuts, bolts or retaining rings have been removed. Check to see if other parts are in the way before using force.

Shafts fitted to tapered splines should be very tight. If shafts are not tight, disassemble and inspect tapered splines. Discard parts that are worn. Be sure tapered splines are clean, dry and free of burrs before putting them in place. Press mating parts together tightly.

Clean all rust from the machined surfaces of new parts.

Part Replacement

Always replace worn or damaged parts with **new** parts.

Exhaust System Leakage

In the event of an exhaust system leak at a muffler or header pipe connection location, disassemble and clean all mating surfaces. Replace any damaged components. If leak still exists, disassemble and repair the leak by applying a bead of Harley-Davidson High-Performance Sealant (Part No. 99650-02) (or an equivalent O2 Sensor/Catalyst-safe alternative). Reassemble components, wipe off any excess sealant and allow adequate curing time following sealant product instructions before operating vehicle.

CLEANING

Part Protection

Before cleaning, protect rubber parts (such as hoses, boots and electrical insulation) from cleaning solutions. Use a grease-proof barrier material. Remove the rubber part if it cannot be properly protected.

Cleaning Process

Any cleaning method may be used as long as it does not result in parts damage. Thorough cleaning is necessary for proper parts inspection. Strip rusted paint areas to bare metal before priming and repainting.

Rust or Corrosion Removal

Remove rust and corrosion with a wire brush, abrasive cloth, sand blasting, vapor blasting or rust remover. Use buffing crocus cloth on highly polished parts that are rusted.

Bearings

Remove shields and seals from bearings before cleaning. Clean bearings with permanent shields and seals in solution.

WARNING

Using compressed air to "spin dry" bearings can cause bearing to fly apart, which could result in death or serious injury. (00505b)

Clean open bearings by soaking them in a petroleum cleaning solution. Never use a solution that contains chlorine.

Let bearings stand and dry. Do not dry with compressed air. Do not spin bearings while they are drying.

TOOL SAFETY

Air Tools

- Always use approved eye protection equipment when performing any task using air-operated tools.
- On all power tools, use only recommended accessories with proper capacity ratings.
- Do not exceed air pressure ratings of any power tools.
- Bits should be placed against work surface before air hammers are operated.
- Disconnect the air supply line to an air hammer before attaching a bit.
- Never point an air tool at yourself or another person.
- Protect bystanders with approved eye protection.

Wrenches

- Never use an extension on a wrench handle.
- If possible, always pull on a wrench handle and adjust your stance to prevent a fall if something lets go.
- Never cock a wrench.
- Never use a hammer on any wrench other than a STRIKING FACE wrench.
- Discard any wrench with broken or battered points.
- Never use a pipe wrench to bend, raise or lift a pipe.

Pliers/Cutters/Pry bars

- Plastic- or vinyl-covered pliers handles are not intended to act as insulation. Do not use on live electrical circuits.
- Do not use pliers or cutters for cutting hardened wire unless they were designed for that purpose.
- Always cut at right angles.
- Do not use any pry bar as a chisel, punch or hammer.

Hammers

- Never strike a hammer against a hardened object, such as another hammer.
- Always grasp a hammer handle firmly, close to the end.
- Strike the object with the full face of the hammer.
- Never work with a hammer which has a loose head.
- Discard hammer if face is chipped or mushroomed.
- Wear approved eye protection when using striking tools.
- Protect bystanders with approved eye protection.

Punches/Chisels

- Never use a punch or chisel with a chipped or mushroomed end; dress mushroomed chisels and punches with a file.
- Hold a chisel or a punch with a tool holder if possible.
- When using a chisel on a small piece, clamp the piece firmly in a vise and chip toward the stationary jaw.
- Wear approved eye protection when using these tools.
- Protect bystanders with approved eye protection.

Screwdrivers

- Do not use a screwdriver for prying, punching, chiseling, scoring or scraping.
- Use the right type of screwdriver for the job; match the tip to the fastener.
- Do not interchange POZIDRIV, PHILLIPS or REED AND PRINCE screwdrivers.
- Screwdriver handles are not intended to act as insulation. Do not use on live electrical circuits.
- Do not use a screwdriver with rounded edges because it will slip. Redress with a file.

Ratchets and Handles

- Periodically clean and lubricate ratchet mechanisms with a light grade oil. Do not replace parts individually; ratchets should be rebuilt with the entire contents of service kit.
- Never hammer or put a pipe extension on a ratchet or handle for added leverage.
- Always support the ratchet head when using socket extensions, but do not put your hand on the head or you may interfere with the action of its reversing mechanism.
- When breaking loose a fastener, apply a small amount of pressure as a test to be sure the ratchet's gear wheel is engaged with the pawl.

Sockets

- Never use hand sockets on power or impact wrenches.
- Select the right size socket for the job.
- Never cock any wrench or socket.
- Select only impact sockets for use with air or electric impact wrenches.
- Replace sockets showing cracks or wear.
- Keep sockets clean.
- Always use approved eye protection when using power or impact sockets.

Storage Units

- Do not open more than one loaded drawer at a time. Close each drawer before opening up another.
- Close lids and lock drawers and doors before moving storage units.
- Do not pull on a tool cabinet; push it in front of you.
- Set the brakes on the locking casters after the cabinet has been rolled to your workspace.

MAINTENANCE SCHEDULE

1.2

GENERAL

The table below lists the periodic maintenance requirements for VRSC model motorcycles. If you are familiar with the procedures, just refer to the table for the recommended service interval. If necessary, see the quick reference table (Table 1-2.) for the required specifications.

If more detailed information is needed, turn to the sections which follow for step-by-step instructions.

Also, throughout this manual, you will be instructed to use various lubricants, greases and sealants. Refer to Table 1-3. for the correct part numbers of these items.

Table 1-1. Regular Service Intervals: 2008 VRSC Models

ITEM SERVICED	PROCEDURE	1000 MI. 1600 KM	5000 MI. 8000 KM	10,000 MI. 16,000 KM	15,000 MI. 24,000 KM	20,000 MI. 32,000 KM	25,000 MI. 40,000 KM	NOTES
Engine oil and filter	Replace	X	X	X	X	X	X	
Oil lines and brake system	Inspect for leaks	X	X	X	X	X	X	1
Air cleaner	Inspect, service as required	X	X	X	X	X	X	
Tires	Check pressure, inspect tread	X	X	X	X	X	X	
Clutch fluid	Check level and condition	X	X	X	X	X	X	
Rear belt and sprockets	Inspect, adjust belt	X	X	X	X	X	X	1
Throttle, brake and clutch controls	Check, adjust and lubricate	X	X	X	X	X	X	1
Jiffy stand	Inspect and lubricate	X	X	X	X	X	X	1
Brake fluid	Check levels and condition	X	X	X	X	X	X	5
Brake pads and discs	Inspect for wear	X	X	X	X	X	X	
Spark plugs	Inspect		X		X		X	
	Replace			X		X		
Electrical equipment and switches	Check operation	X	X	X	X	X	X	
Front fork oil		Replace every 80,000 kilometers (50,000 miles)						1
Steering head bearings	Adjust	X				X		1, 2
Valve lash		Adjust valve lash every 24,000 kilometers (15,000 miles)						1, 4
Cooling system	Inspect; check clamps for tightness, check coolant freeze point	X		X		X		1
Coolant		Replace every 48,000 kilometers (30,000 miles)						1
Radiator	Clean	X	X	X	X	X	X	
Critical fasteners	Check tightness	X		X		X		1
Battery	Check battery and clean connections							3
Exhaust system	Inspect for leaks, cracks, and loose or missing fasteners or heat shields	X	X	X	X	X	X	3
Road test	Verify component and system functions	X	X	X	X	X	X	
NOTES:	1. Should be performed by an authorized Harley-Davidson dealer, unless you have the proper tools, service data and are mechanically qualified. 2. Disassemble, lubricate and inspect every 48,000 kilometers (30,000 miles). 3. Perform annually. 4. Could vary with frequency of operation and riding style. 5. Change D.O.T. 4 and flush brake system every two years.							

Table 1-2. Quick Reference Maintenance Chart

ITEM SERVICED	SPECIFICATION	DATA
Engine oil and filter	Drain plug torque	35 Nm (25.8 ft-lbs)
	Oil capacity	5.0 qt. (4.7 L) with filter
	Oil Level	Bike upright, unscrew dipstick, wipe off and screw back in. Unscrew and verify level.
	Filter	Hand tighten 2/3-1 full turn after gasket contact
	Black filter part number	63793-01K

Table 1-2. Quick Reference Maintenance Chart

ITEM SERVICED	SPECIFICATION	DATA
Radiator and coolant	Drain plug torque	2.3-2.8 Nm (21-24 in-lbs)
	System capacity	2.54 qt. (2.4 L)
Clutch adjustment	Free play at adjuster screw	Hydraulic
	Bleeder Screw Torque	9-11 Nm (80-100 in-lbs)
	Free play at hand lever	4 mm (5/32 in.)
	Clutch inspection cover torque	6-10 Nm (53-88 in-lbs)
Transmission lubricant	Lubricant level	Wet sump engine with integral transmission, wet clutch. See engine oil.
Tire condition and pressure	Pressure for solo rider	Front: 2.5 bar (36 psi) Rear (180mm): 2.5 bar (36 psi) Rear (240mm): 2.6 bar (38 psi)
	Pressure for rider and passenger	Front: 2.6 bar (38 psi) Rear (180mm): 2.9 bar (42 psi) Rear (240mm): 2.76 bar (38 psi)
	Wear	Replace tire if 0.8 mm (1/32 in.) or less of tread pattern remains
Steering head bearings	Lubricant for steering head bearings	SPECIAL PURPOSE GREASE Part No. 99857-97 (14 oz. cartridge)
Brake fluid reservoir level	D.O.T. 4 hydraulic brake fluid	99953-99A (12 oz.)
	Proper fluid level front	5 mm (13/64 in.) from the top
	Proper fluid level rear	12.7 mm (0.5 in.) below gasket surface
	Master cylinder reservoir cover torque	0.8-1.2 Nm (7-11 in-lbs)
Brake pad linings and discs	Minimum brake pad thickness	Wear indicator lines in pad material must be visible
	Minimum brake disc thickness	4.5 mm (0.177 in.)
Drive belt	Upward measurement force applied at midpoint of top belt strand	4.5 kg (10 lb.)
	Belt deflection with no rider on motorcycle	8 mm (0.315 in.)
Air cleaner	Air cleaner velocity stack screw torque	6 Nm (53 in-lbs)
	Air cleaner cover wing nut torque	Turn wing nut 2.5-3 turns after contact
Throttle cables	Lubricant	SUPER OIL Part No. 94968-85TV (1/4 fl. oz.)
	Handlebar clamp screw torque	6.8-9.0 Nm (60-80 in-lbs)
	Handlebar switch housing screw torque	4-5 Nm (35-45 in-lbs)
Spark plugs	Type	10R12A
	Gap	0.89 mm (0.035 in.)
	Torque	23 Nm (17 ft-lbs) with anti-seize applied to threads
Engine idle speed	Idle speed	1250 RPM (Japan 1,400)
Front fork oil	Type	HYDRAULIC FORK OIL (TYPE E) Part No. 99884-80 (16 oz.)
Battery	Lubricant	ELECTRICAL CONTACT LUBRICANT Part No. 99861-02 (1 oz.)
	Battery terminal torque	6.8-10.9 Nm (60-96 in-lbs)

Table 1-3. Lubricants, Greases, Sealants

ITEM	PART NUMBER	PACKAGE
Anti-Seize Lubricant	98960-97	1 oz squeeze tube
CCI #20 Brake Grease	42830-05 (included in master cylinder rebuild kit)	squeeze packet
D.O.T. 4 Brake Fluid	99953-99A	12 oz. bottle
Electrical Contact Lubricant	99861-02	1 oz squeeze tube
Genuine Harley-Davidson Formula+ Transmission and Primary Chaincase Lubricant	99851-05	1 qt bottle
G40M Brake Grease	42820-04	squeeze packet
Gray High Performance Sealant	99650-02	1.9 oz squeeze tube
HYLOMAR Gasket and Thread Sealant	99653-85	3.5 oz tube
Loctite Pipe Sealant With Teflon 565	99818-97	6 ml squeeze tube
Loctite Prism Primer (770)		
Loctite Prism Superbonder (411)		
Loctite Superbonder 420 Adhesive		
Loctite Threadlocker 243 (blue)	99642-97	6 ml squeeze tube
Loctite Threadlocker 262 (red)	94759-99	6 ml squeeze tube
Loctite Threadlocker 272	98618-03	10 ml bottle
Special Purpose Grease	99857-97	14 oz. cartridge
Super Oil	94968-85TV	1/4 fl. oz
Type "E" Hydraulic Fork Oil	99884-80	16 oz bottle

FUEL

Refer to [Table 1-4](#). Always use a good quality unleaded gasoline. Octane ratings are usually found on the pump.

⚠ WARNING

Avoid spills. Slowly remove filler cap. Do not fill above bottom of filler neck insert, leaving air space for fuel expansion. Secure filler cap after refueling. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00028a)

⚠ WARNING

Use care when refueling. Pressurized air in fuel tank can force gasoline to escape through filler tube. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00029a)

Modern service station pumps dispense a high flow of gasoline into a motorcycle fuel tank making air entrapment and pressurization a possibility.

Table 1-4. Octane Ratings

SPECIFICATION	RATING
Pump Octane (R+M)/2	91 (95 RON)

GASOLINE BLENDS

Your motorcycle was designed to get the best performance and efficiency using unleaded gasoline. Most gasoline is blended with alcohol and/or ether to create oxygenated blends. The type and amount of alcohol or ether added to the fuel is important.

CAUTION

Do not use gasoline that contains methanol. Doing so can result in fuel system component failure, engine damage and/or equipment malfunction. (00148a)

- Gasoline containing METHYL TERTIARY BUTYL ETHER (MTBE): Gasoline/MTBE blends are a mixture of gasoline

and as much as 15% MTBE. Gasoline/MTBE blends can be used in your motorcycle.

- ETHANOL is a mixture of 10% ethanol (Grain alcohol) and 90% unleaded gasoline. Gasoline/ethanol blends can be used in your motorcycle if the ethanol content does **not** exceed 10%.
- REFORMULATED OR OXYGENATED GASOLINES (RFG): Reformulated gasoline is a term used to describe gasoline blends that are specifically designed to burn cleaner than other types of gasoline, leaving fewer tailpipe emissions. They are also formulated to evaporate less when you are filling your tank. Reformulated gasolines use additives to oxygenate the gas. Your motorcycle will run normally using this type of gas and Harley-Davidson recommends you use it when possible, as an aid to cleaner air in our environment.
- Do not use race gas or octane boosters. Use of these fuels will damage the fuel system.

Some gasoline blends might adversely affect the starting, driveability or fuel efficiency of the motorcycle. If any of these problems are experienced, try a different brand of gasoline or gasoline with a higher octane blend.

ENGINE LUBRICATION

CAUTION

Do not switch lubricant brands indiscriminately because some lubricants interact chemically when mixed. Use of inferior lubricants can damage the engine. (00184a)

Engine oil is a major factor in the performance and service life of the engine. Always use the proper grade of oil for the lowest temperature expected before the next scheduled oil change. Refer to [Table 1-5](#). Your authorized dealer has the proper oil to suit your requirements.

If it is necessary to add oil and Harley-Davidson oil is not available, use an oil certified for diesel engines. Acceptable diesel engine oil designations include: CF-4, CG-4, CH-4 and CI-4.

The preferred viscosities for the diesel engine oils in descending order are: 20W50, 15W40 and 10W40.

At the first opportunity, see an authorized dealer to change back to 100 percent Harley-Davidson oil.

Table 1-5. Recommended Engine Oils: VRSC Models

HARLEY-DAVIDSON TYPE	VISCOSITY	HARLEY-DAVIDSON RATING	LOWEST AMBIENT TEMPERATURE	COLD WEATHER STARTS BELOW 50° F (10° C)
HD Multi-grade	SAE 10W40	HD 360	Below 40° F (4° C)	Excellent
HD Multi-grade	SAE 20W50	HD 360	Above 40° F (4° C)	Good

WINTER LUBRICATION

In colder climates, the engine oil should be changed often. If motorcycle is used frequently for short trips, less than 24

kilometers (15 miles), in ambient temperatures below 16° C (60° F), oil change intervals should be reduced to 2400 kilometers (1500 miles). Motorcycles used only for short runs

must have a thorough tank flush-out before **new** oil is put in. The tank flush-out should be performed by an authorized dealer or qualified technician.

NOTE

The further below freezing the temperature drops, the shorter the oil change interval should be.

Water vapor is a normal by-product of combustion in any engine. During cold weather operation, some of the water vapor condenses to liquid form on the cool metal surfaces inside the

engine. In freezing weather this water will become slush or ice and, if allowed to accumulate too long, may block the oil lines and cause damage to the engine.

If the engine is run frequently and allowed to thoroughly warm up, most of this water will become vapor again and will be blown out through the crankcase breather.

If the engine is not run frequently and allowed to thoroughly warm up, this water will accumulate, mix with the engine oil and form a sludge that is harmful to the engine.

GENERAL

Refer to [Table 1-6](#). This table gives the location and bulb requirements for Harley-Davidson VRSC motorcycles.

NOTES

- All VRSC speedometers, tachometers indicator lamps and odometers are illuminated with LEDs.
- LEDs are non-repairable. The entire instrument cluster must be replaced if an LED fails.

Table 1-6. Bulb Chart: 2008 VRSC Models

LAMP	DESCRIPTION (ALL LAMPS 12 VOLT)	BULBS REQUIRED	CURRENT DRAW (AMPERAGE)	H-D PART NUMBER
Headlamp VRSCAW	low beam	1	4.30	68881-01
	high beam	1	5.10	67717-01
Headlamp VRSCD, VRSCDX	low beam/high beam	1	4.58/5.00	68329-03
Position lamp international	position lamp	1	0.36	53436-97
Tail and stop lamp	tail lamp	1	0.59	68168-89A
	stop lamp	1	2.25	68168-89A
	license plate illumination	2	0.33	68193-95
	tail lamp international	1	0.42	68169-90A
	stop lamp international	1	1.75	68169-90A
	license plate illumination international	2	0.37	53436-97
Turn signal lamp	front/running	2	2.25/0.59	68168-89
	rear	2	2.25	68572-64B
	front/running international	2	1.75	68163-84
	rear international	2	1.75	68163-84
Instrument cluster	Illuminated with LEDs. Replace entire assembly upon failure.			

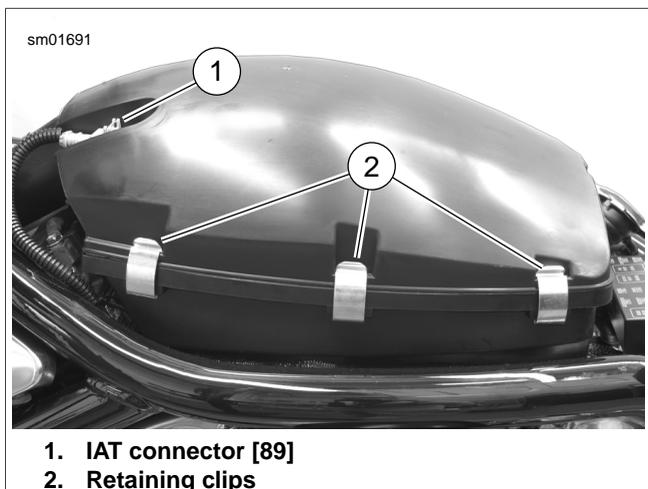
REMOVAL

1. Open seat.
2. See [Figure 1-1](#). Remove airbox cover by turning bailhead fastener 1/4 turn counterclockwise (CCW). Pull airbox cover away from locating holes.



Figure 1-1. Airbox Cover Bailhead Fastener (typical)

3. See [Figure 1-2](#). Remove IAT connector (1) by pushing down on bail wire to unlock. Airbox top is retained by eight clips (2), three per side, one at the rear and one in the front under the snorkel. Disconnect clips and remove airbox top.



1. IAT connector [89]
2. Retaining clips

Figure 1-2. Air Filter Top

4. See [Figure 1-3](#). Remove wing nut securing filter cap and air filter.

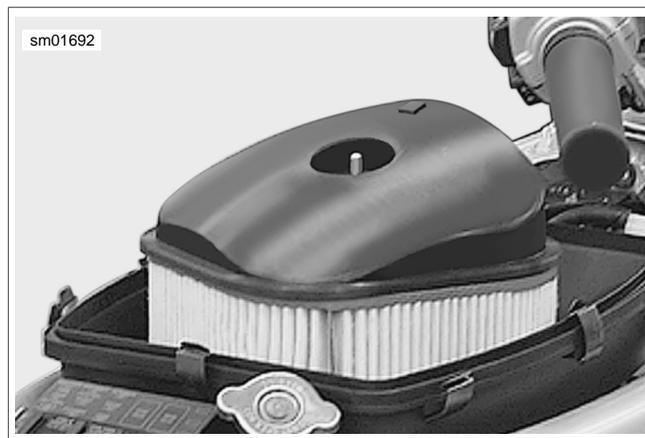
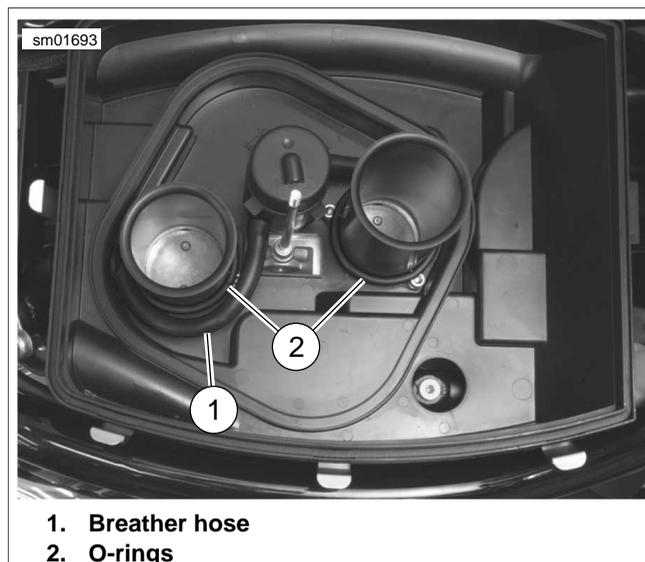


Figure 1-3. Air Filter

5. See [Figure 1-4](#). Disconnect breather hose (1). Slide velocity stack o-ring (2) up the velocity stack body to access the three retaining fasteners. Remove the velocity stacks.



1. Breather hose
2. O-rings

Figure 1-4. Velocity Stacks (typical)

6. Gently lift the air filter bottom. Front breather hose is a press-fit and will disconnect, rear breather has a worm clamp holding hose to air filter bottom. Loosen clamp and remove air filter bottom.

CAUTION

Cover the throttle body bores with duct tape to prevent objects from falling down the injector bores. Do NOT use shop cloths or objects that could damage the throttle plates. (00212d)

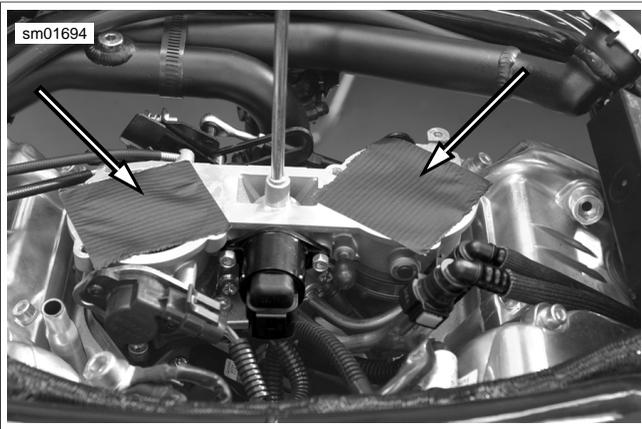


Figure 1-5. Airbox Removed (Injector intakes shown by arrows)

INSTALLATION

1. Remove tape from throttle body intakes.
2. See [Figure 1-6](#). Inspect and replace bottom airbox gasket if damaged. Check gasket position on air filter bottom. Gasket is located by three alignment pins on mating surface.

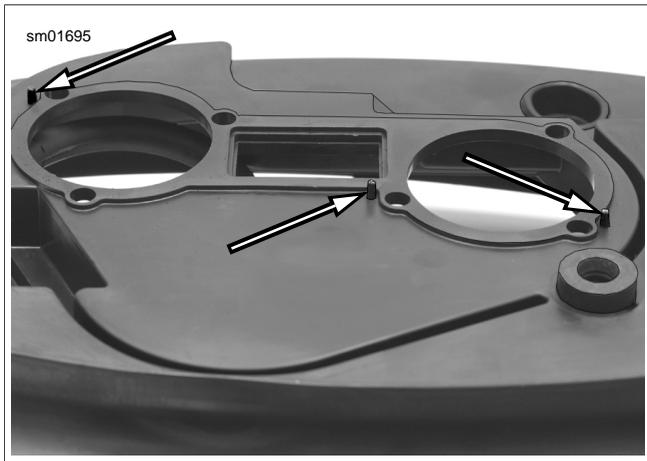


Figure 1-6. Air Filter Gasket Alignment Pins (3)

3. Place air filter bottom over throttle body and attach rear breather hose with hose clamp.
4. Align air filter bottom with front breather hose and press firmly in position.

NOTE

Velocity stacks have a mark at the bottom flange between two of the fastener locations. Align the mark with the corresponding mark on the air filter bottom.

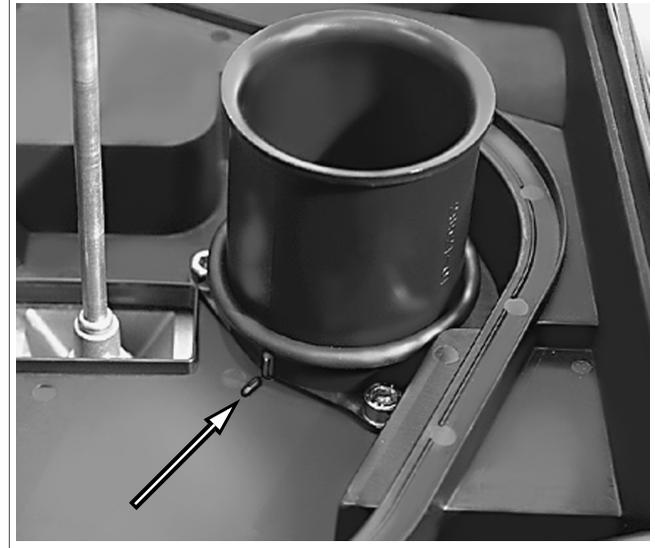


Figure 1-7. Velocity Stack Alignment Marks

5. Align index marks and install velocity stacks, longest in front. Tighten fasteners to 6 Nm (53 **in-lbs**).
6. Slide o-rings down the velocity stack body until they contact the three fasteners.

NOTE

The o-rings retain the velocity stack fasteners when assembling airbox.

7. Attach the breather hose.
8. Place air filter element in air filter bottom.
9. Align air filter cap and fasten with wing nut. Turn wing nut 2.5-3 turns after contact.
10. Position air filter top over bottom section with snorkel between frame tubes at the steering neck.
11. Fasten clips along each side and clip at rear.

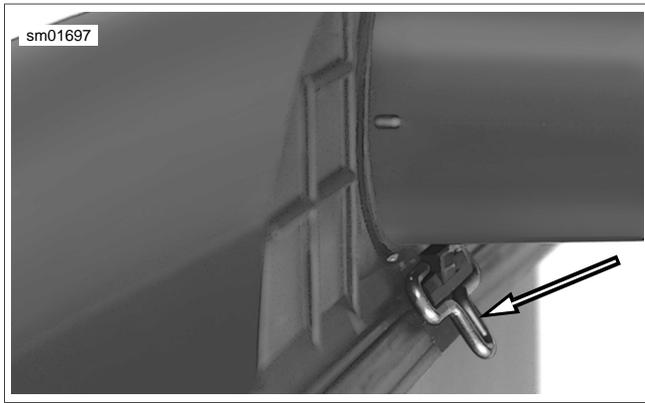
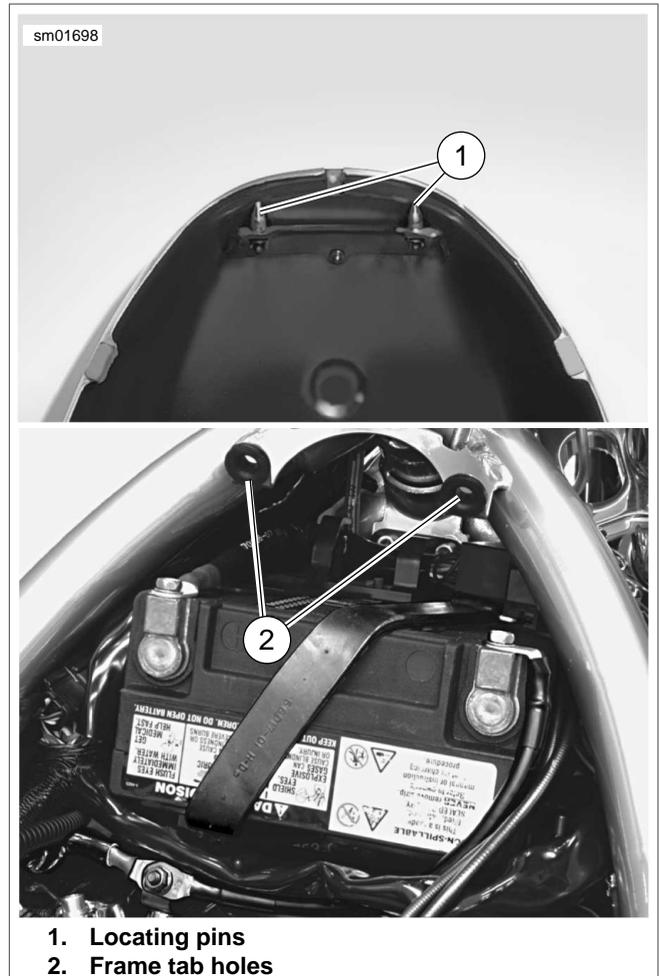


Figure 1-8. Front Airbox Clip

12. See [Figure 1-8](#). Front clip under snorkel is attached to top section and must be fastened over the lip on the air filter bottom.
13. See [Figure 1-2](#). Attach IAT connector.
14. See [Figure 1-9](#). Position the airbox cover with the locating pins (1) in the holes (2) on the frame tabs.
15. See [Figure 1-1](#). Turn bailhead fastener 1/4 turn clockwise.



1. Locating pins
2. Frame tab holes

Figure 1-9. Airbox Cover and Frame Tabs (typical)

EXHAUST SYSTEM LEAK CHECK

Check the exhaust system for leaks at every scheduled service interval as follows:

1. Check entire exhaust system for loose or missing fasteners, broken pipe clamps or brackets, and obvious signs of leakage (carbon tracks at pipe joints, etc.).
2. Check for loose or broken heat shields. Repair or replace as necessary.
3. Start engine, cover muffler ends with clean, dry shop towels and listen for audible signs of exhaust leakage.
4. Correct any leaks detected. See [4.14 EXHAUST SYSTEM: VRSCAW](#), [4.15 EXHAUST SYSTEM: VRSCD](#) or [4.16 EXHAUST SYSTEM: VRSCDX](#) for exhaust system removal and installation procedures.

REMOVAL

NOTE

The radiator side covers are delicate and should not be forced into or from mounted position. Use care during removal and installation to avoid damage.

1. Remove maxi-fuse.

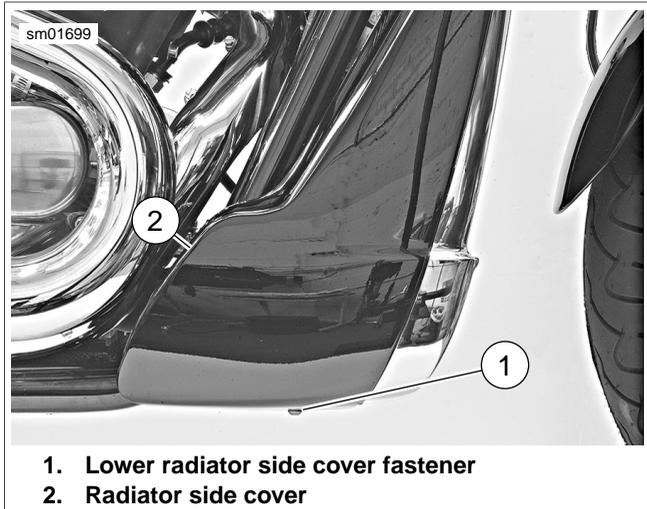


Figure 1-10. Lower Radiator Side Cover Fastener (typical) (mid mount control right side shown)

2. See [Figure 1-10](#). Remove lower radiator side cover fastener.

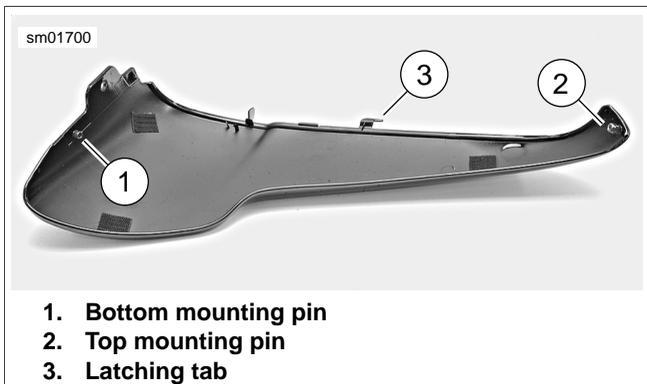


Figure 1-11. Radiator Side Cover (typical) (inside view)

3. See [Figure 1-11](#). Radiator side cover is held in place by a bottom mounting pin (1), top mounting pin (2) and latching tab (3). Remove radiator side covers as follows:
 - a. See [Figure 1-12](#). Grasp bottom of radiator side cover and pull down gently to disengage bottom mounting pin from bottom mounting hole located in radiator front cover.
 - b. See [Figure 1-13](#). While supporting radiator side cover, grasp top of side cover and pull up gently to disengage top mounting pin from mounting hole in front cover.
 - c. Slide radiator side cover down gently to disengage latching tab from mounting lip in radiator front cover.
 - d. Set radiator side cover aside.

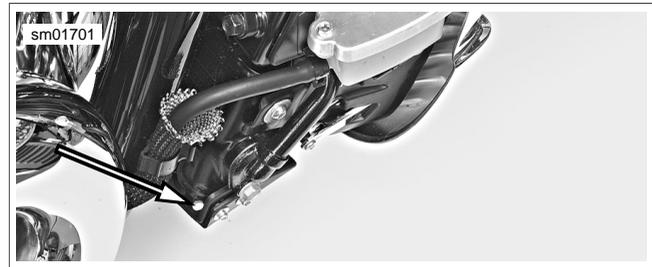


Figure 1-12. Bottom Mounting Hole



Figure 1-13. Top Mounting Hole

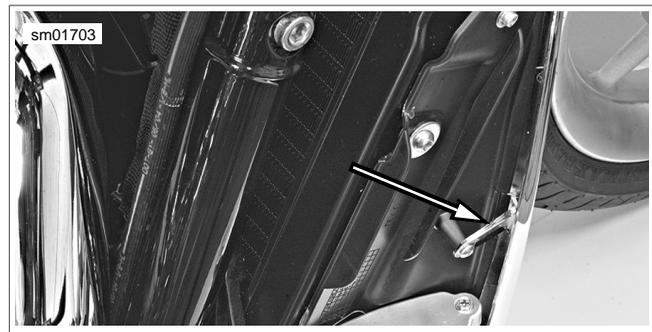


Figure 1-14. Tab Mounting Lip

INSTALLATION

- Product: 2008 Harley Davidson VRSC Models Motorcycle Service Repair Workshop Manual
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1. See [Figure 1-11](#). Position radiator side cover on radiator front cover and gently slide side cover upward until matching tab fits into tab mounting lip.
 2. See [Figure 1-13](#). Engage top mounting pin of radiator side cover into top mounting hole of radiator front cover.
 3. See [Figure 1-12](#). Engage lower mounting pin of radiator side cover into bottom mounting hold of radiator front cover.
 4. See [Figure 1-10](#). Install radiator side cover fastener and tighten to 3-4 Nm (27-35 **in-lbs**).

Sample of manual. Download All 567 pages at:

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